**Breaking Down the Steps of Cellular Respiration**

Ms. Ottolini, AP Biology

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| **Process** | **Overall Description**  (including reactants, products, and enzymes or structures used) | **Location in Cell or Mitochondrion** | **Amount of ATP Produced and Type of ATP Production** | **Electron Carriers Produced or Used** | **What is Oxidized?** | **What is Reduced?** |
| **Glycolysis** | Glucose is broken down into 2 pyruvates | Cytoplasm / Cytosol | 2 ATP  (Substrate-Level) | 2 NADH | Glucose | NAD+ |
| **Creation of Acetyl CoA** | Pyruvate is broken down into Acetyl CoA and CO2 | Matrix of Mitochondrion | N/A | 2 NADH | Pyruvate | NAD+ |
| **Kreb’s Cycle / Citric Acid Cycle** | Acetyl CoA is broken down to CO2, but the overall goal is to make electron carriers! | Matrix of Mitochondrion | 2 ATP  (substrate-level) | 6 NADH,  2 FADH2 | Acetyl CoA | NAD+,  FADH |
| **Electron Transport Chain / Chemiosmosis** | ATP is created!  Convert energy from electrons in NADH and FADH2 🡪 H+ gradient 🡪 ATP synthesis | Inner Membrane | 32-34 ATP  (oxidative) | All NADH and FADH2 made in the last three steps are used | NADH, FADH2 | Oxygen Gas (O2) |